

**Wardsboro BF 013-1(21)  
VT 100, Culvert 70**

**Wardsboro BF 013-1(22)  
VT 100, Culvert 73**

## **Public Information Meeting**



**Presented by  
Kristin Higgins, P.E., Project Manager  
Jeremy Salvatori, Project Designer  
Len Gluck, Right of Way Agent  
Vermont Agency of Transportation**

**February 4, 2014**



# Meeting Outline

- Project Background
- Existing culvert deficiencies
- Alternative Previously Recommended (Sept. 2013)
- Wardsboro – Jamaica ER STP 013-1(17)
- Paving Project affect on culvert replacement schedule
- Revised Culvert Replacement Recommendation
- Revised Culvert Replacement Details
- Revised Maintenance of Traffic
- Next Steps
- Right of Way Acquisition

**Project**

**Background**

# Project Background

- The structures are owned and maintained by the State
- VT Rte 100 is a State Highway
- Functionally labeled as a Rural Minor Arterial
- Posted Speed = 50 mph (Design Speed)
- The culverts were built in 1957 (56 years old)
- Culverts are Corrugated Metal Plate Pipe Arch
- Culvert 70 = 6' x 9' x 64' long
- Culvert 73 = 5'-7" x 7'-11" x 50' long

# Traffic Data

	<b>“Current Year” 2016</b>	<b>“Design Year” 2036</b>
<b>Average Annual Daily Traffic</b>	<b>1,100</b>	<b>1,200</b>
<b>Design Hourly Volume</b>	<b>150</b>	<b>170</b>
<b>Average Daily Truck Traffic</b>	<b>130</b>	<b>210</b>
<b>% Trucks</b>	<b>13.7</b>	<b>20.4</b>

# Culvert #70

**This portion of the presentation  
is specific to Culvert #70**



## VT Rte 100 Looking East





## VT Rte 100 Looking West





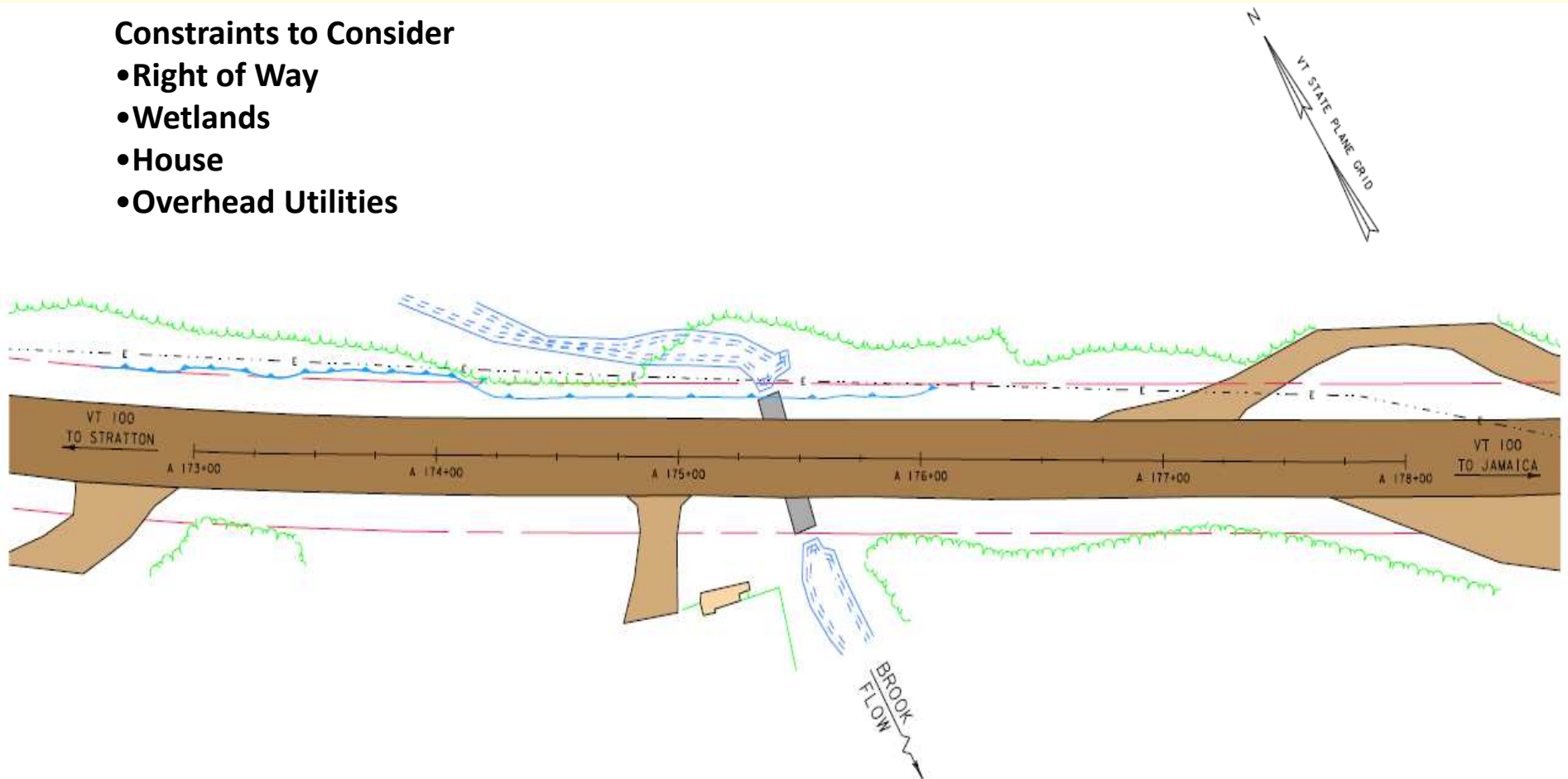
## Culvert Outlet



# Layout Showing Constraints

## Constraints to Consider

- Right of Way
- Wetlands
- House
- Overhead Utilities



# **Culvert #73**

**This portion of the presentation  
is specific to Culvert #73**



## VT Rte 100 Looking East



05.15.2013



## VT Rte 100 Looking West





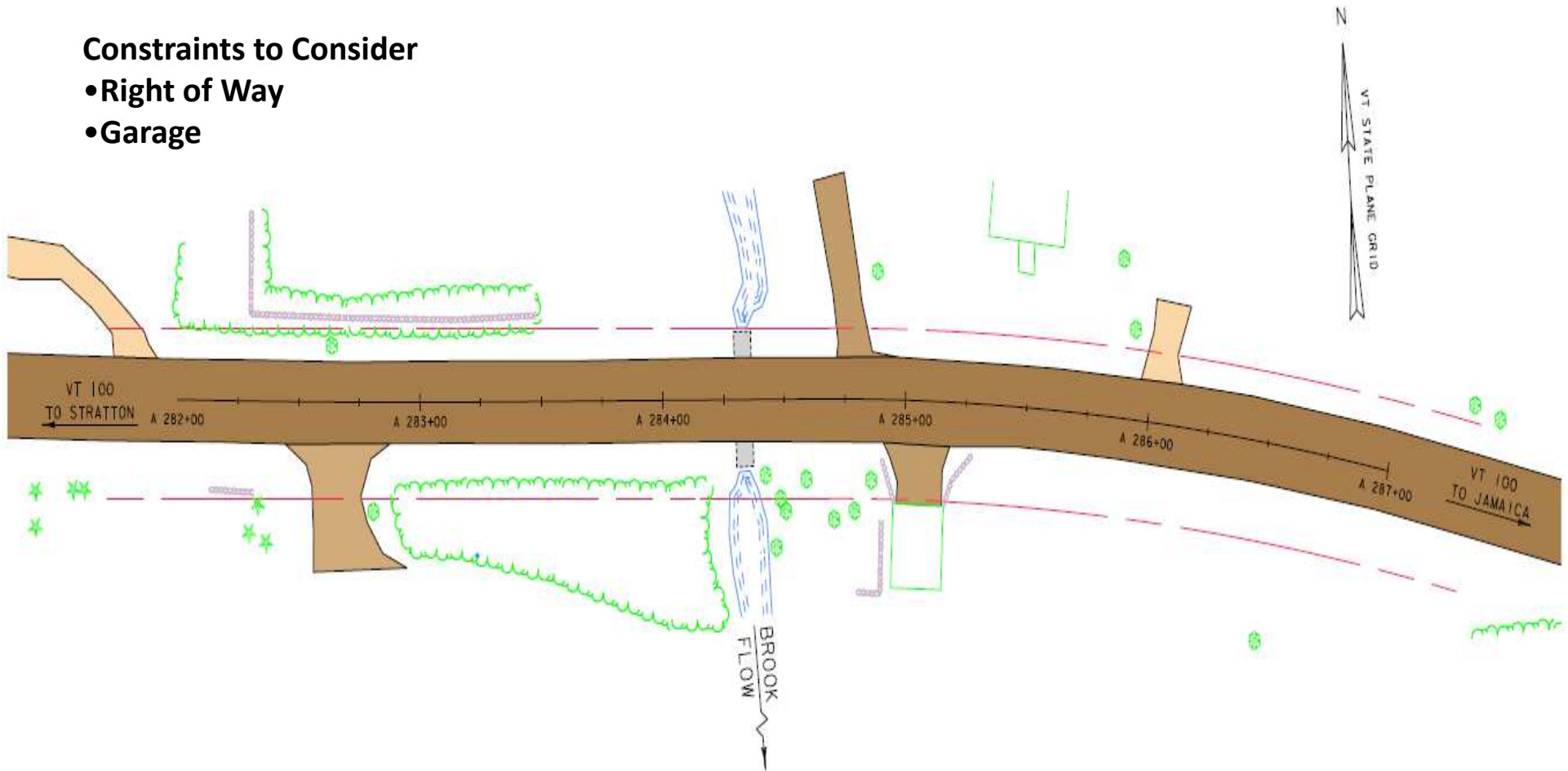
## Culvert Outlet



# Layout Showing Constraints

## Constraints to Consider

- Right of Way
- Garage



# **Existing Culvert Deficiencies**



# EXISTING CULVERT DEFICIENCIES

## Inspection Rating Information (Based on a scale of 9)

	B-70	B-73
Channel Rating	6 Satisfactory	7 Good
Culvert Rating	3 Serious	3 Serious

## Rating Definitions

9 Excellent  
8 Very Good  
7 Good  
6 Satisfactory  
5 Fair  
4 Poor  
3 Serious  
2 Critical  
1 Imminent Failure

## Deficiencies

- Serious culvert rating with perforations and rust in bottom
- The roadway width is substandard
- There is no clear area at culvert for adequate vehicle recovery or guard /approach rail to prevent vehicles from going off road at culverts
- The culverts constrict the natural channel width
- The culvert is undersized hydraulically



**Alternative  
Previously  
Recommended**

# Alternative Previously Recommended

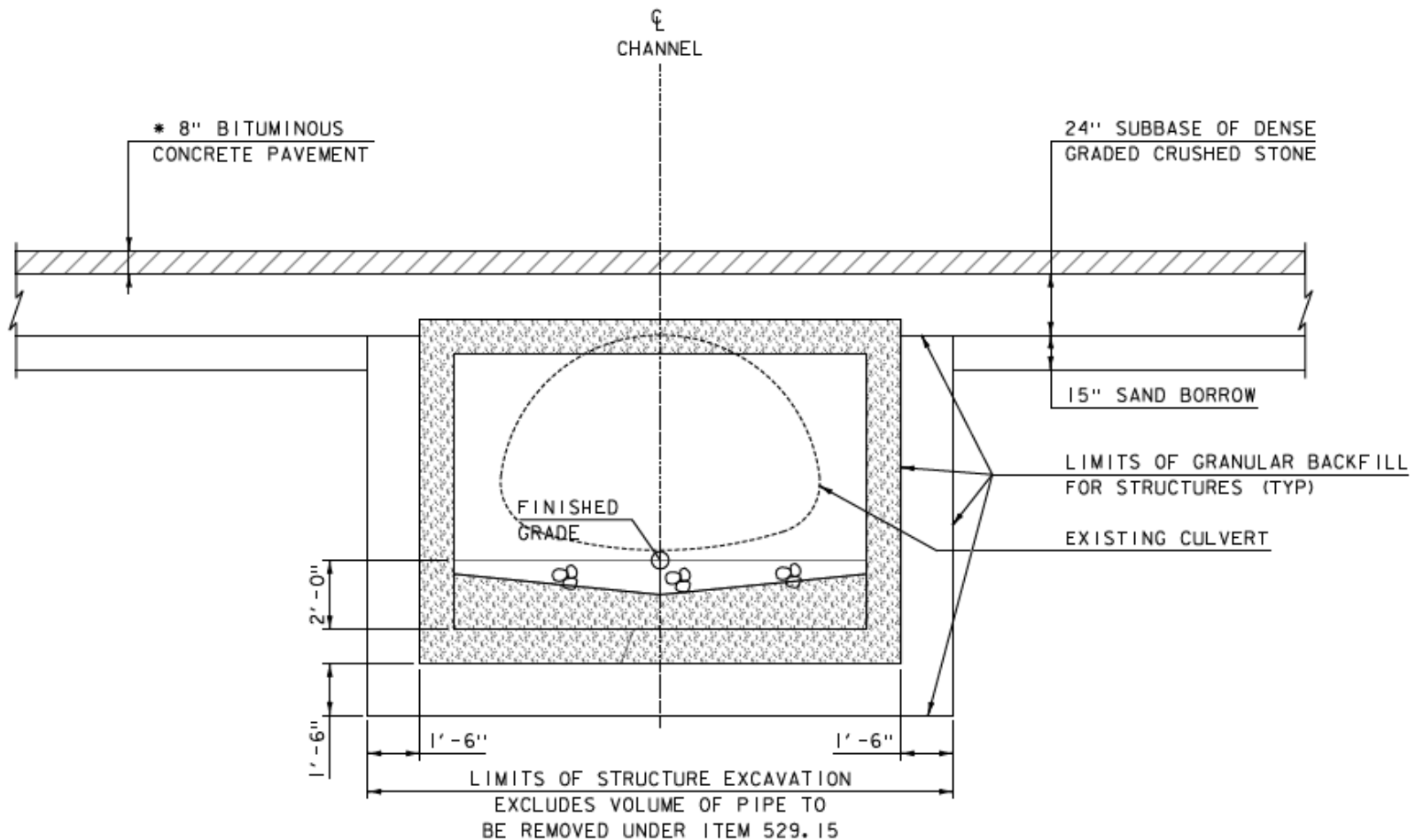
## Full Culvert Replacement

- Replace both culverts with precast concrete box culverts
- Culverts located in approximately the same location
- Cost-effective
- Long-term fix

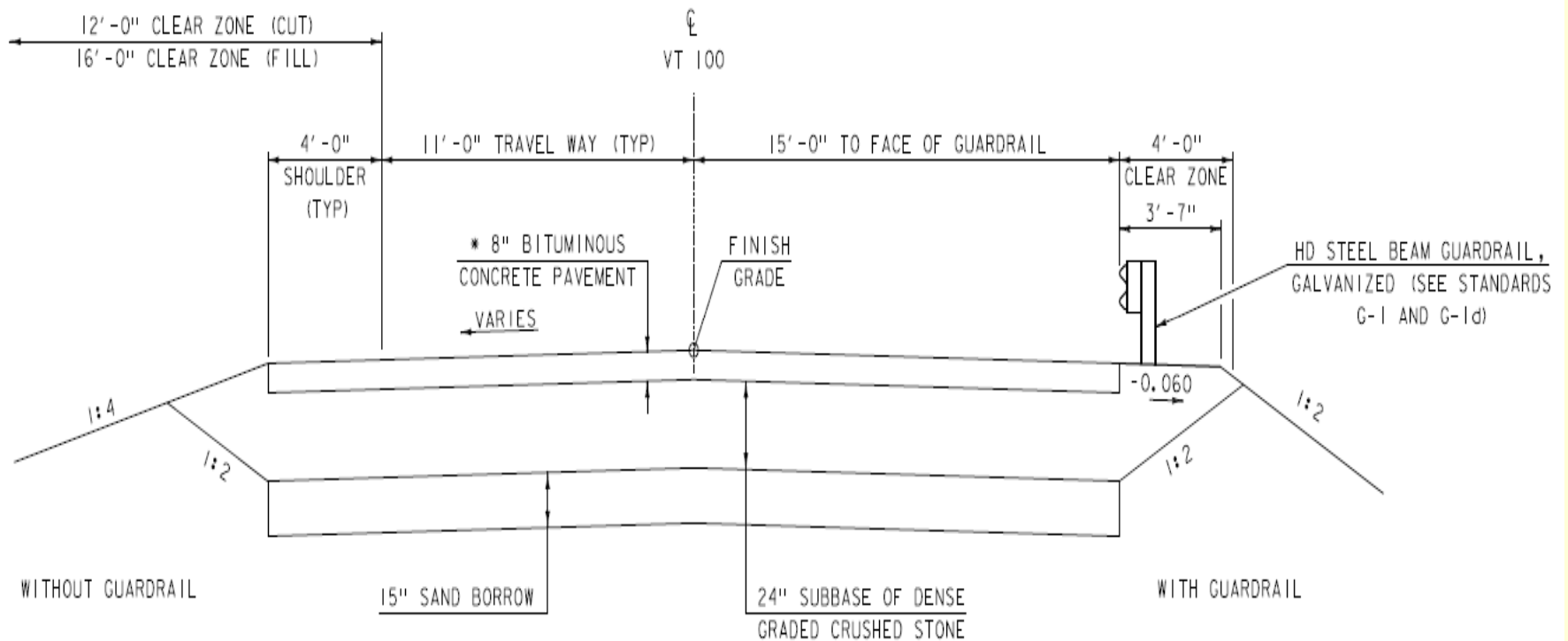
# Full Culvert Replacement Details

- 14' wide x 8' high concrete box culvert
- 30' Roadway width 4' shoulders with 11' Travel Lanes \*\*\*
- Maintain existing centerline of VT Route 100
- Long term (80 year) solution
- New structure allows for passing of Q100 without over topping roadway
- Construction planned for 2015/2016 \*\*\*

# Box Culvert Typical

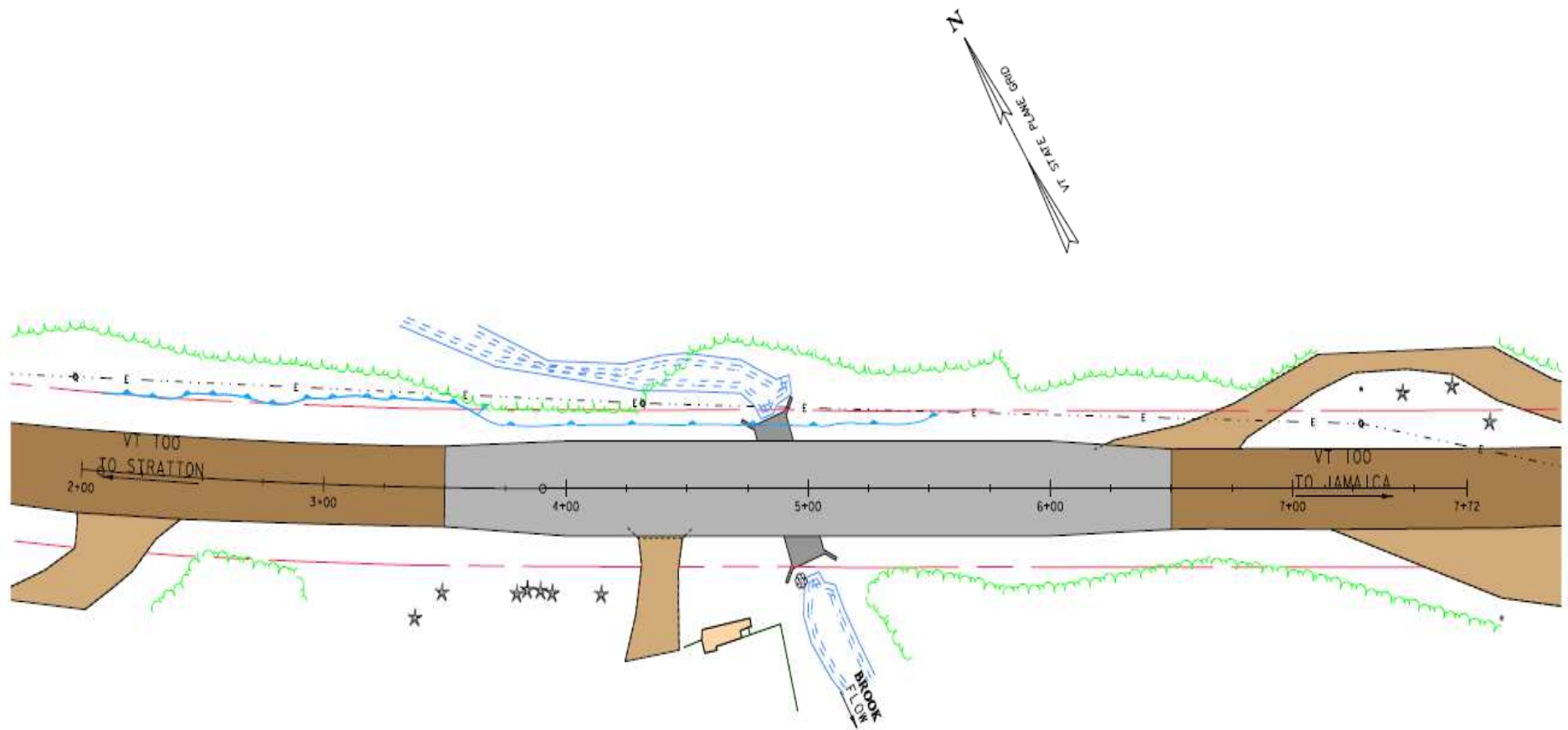


# Proposed 4-11-11-4 typical

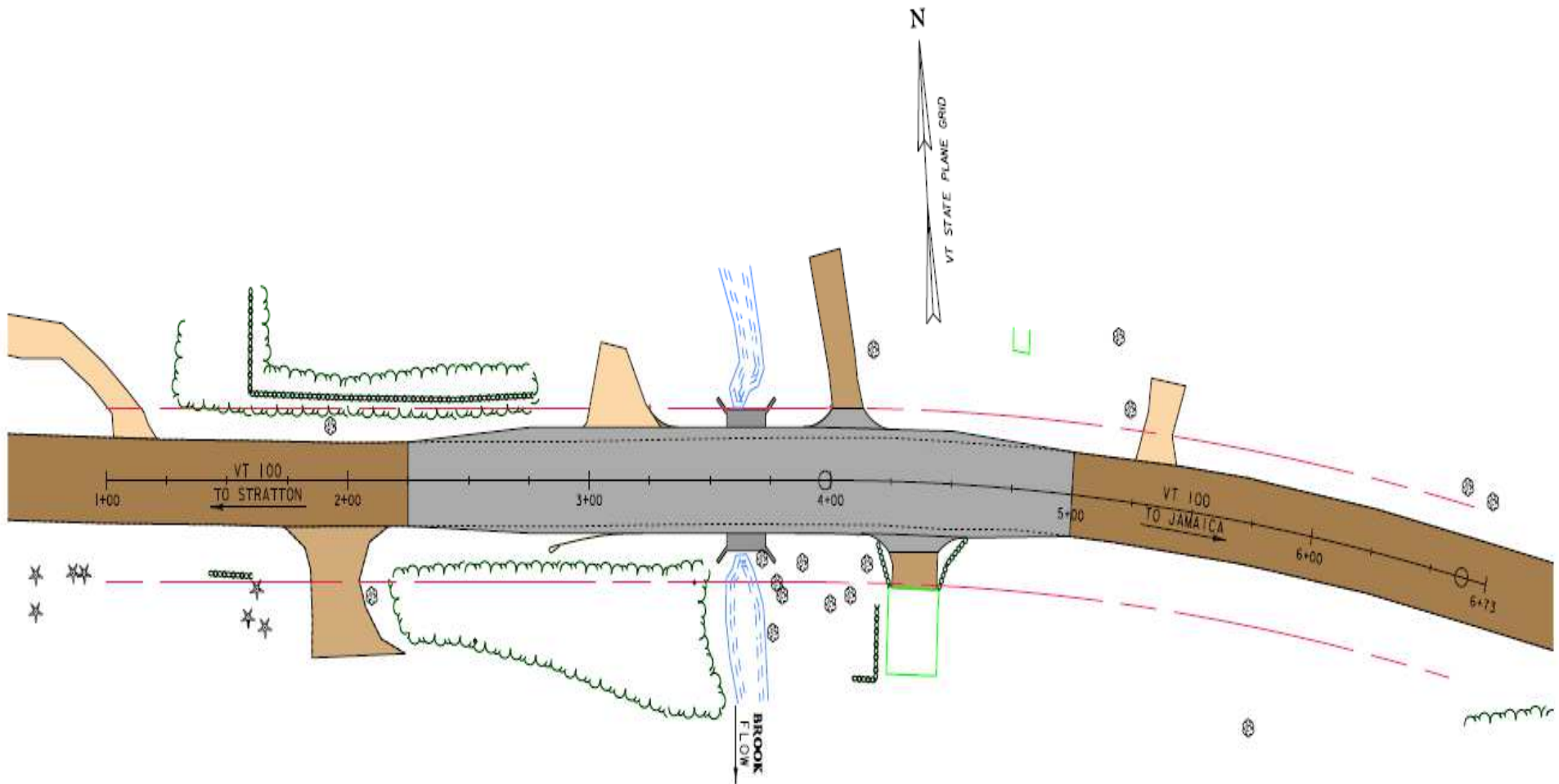




# Layout Culvert #70



# Layout Culvert #73



# Alternative Previously Recommended

## Full Bridge Replacement

- Replace with a precast concrete box culvert
- Cost-effective
- Long-term fix

## Maintenance of Traffic

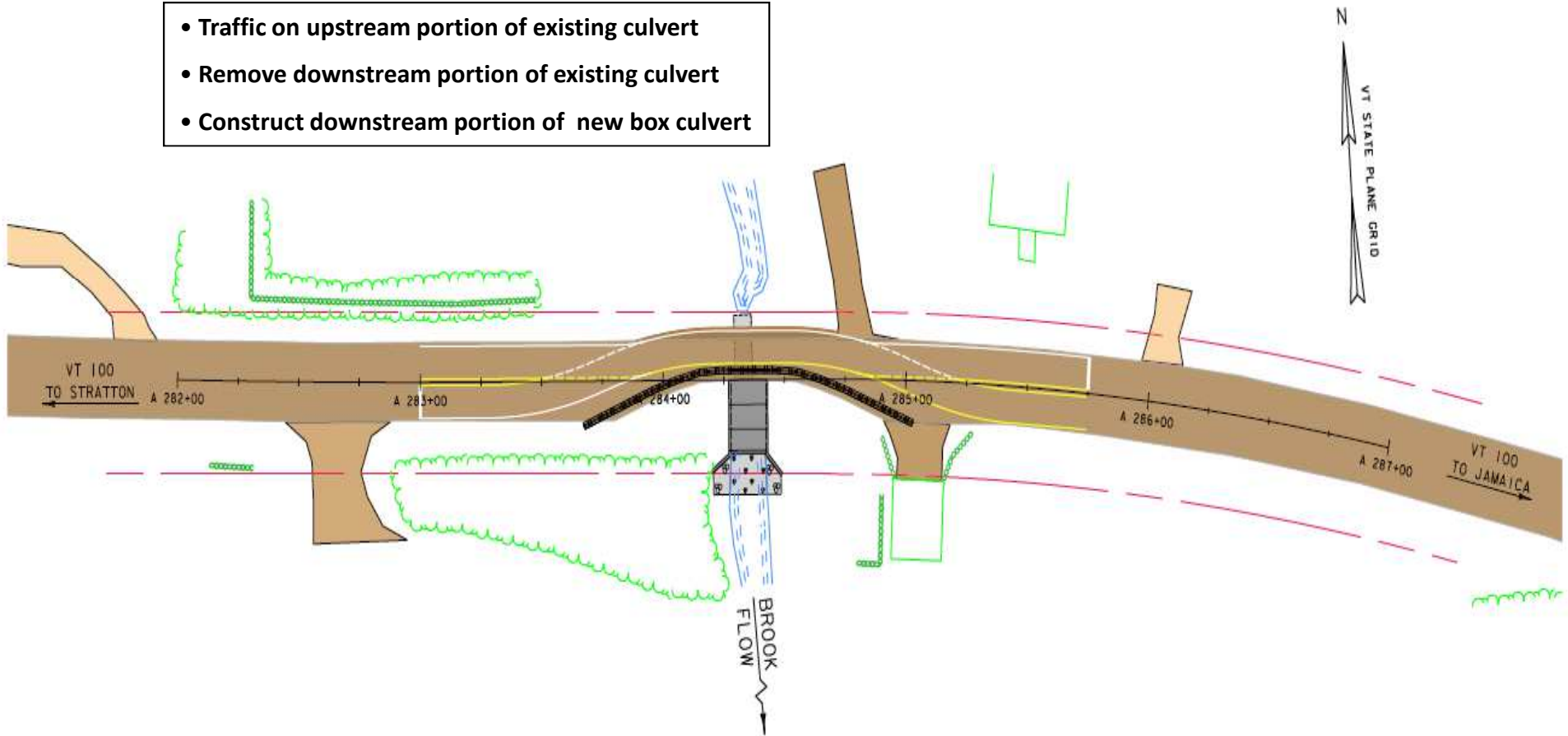
- Use Phased Construction \*\*\*

# Phased Construction

- Shift traffic to one lane and build structure ½ at a time
- Relatively long construction duration
- Safety concerns w/motorists near workers
- Traffic congestion and/or conflicts due to one-lane
- Tight construction area

# Phased Construction – Phase 1

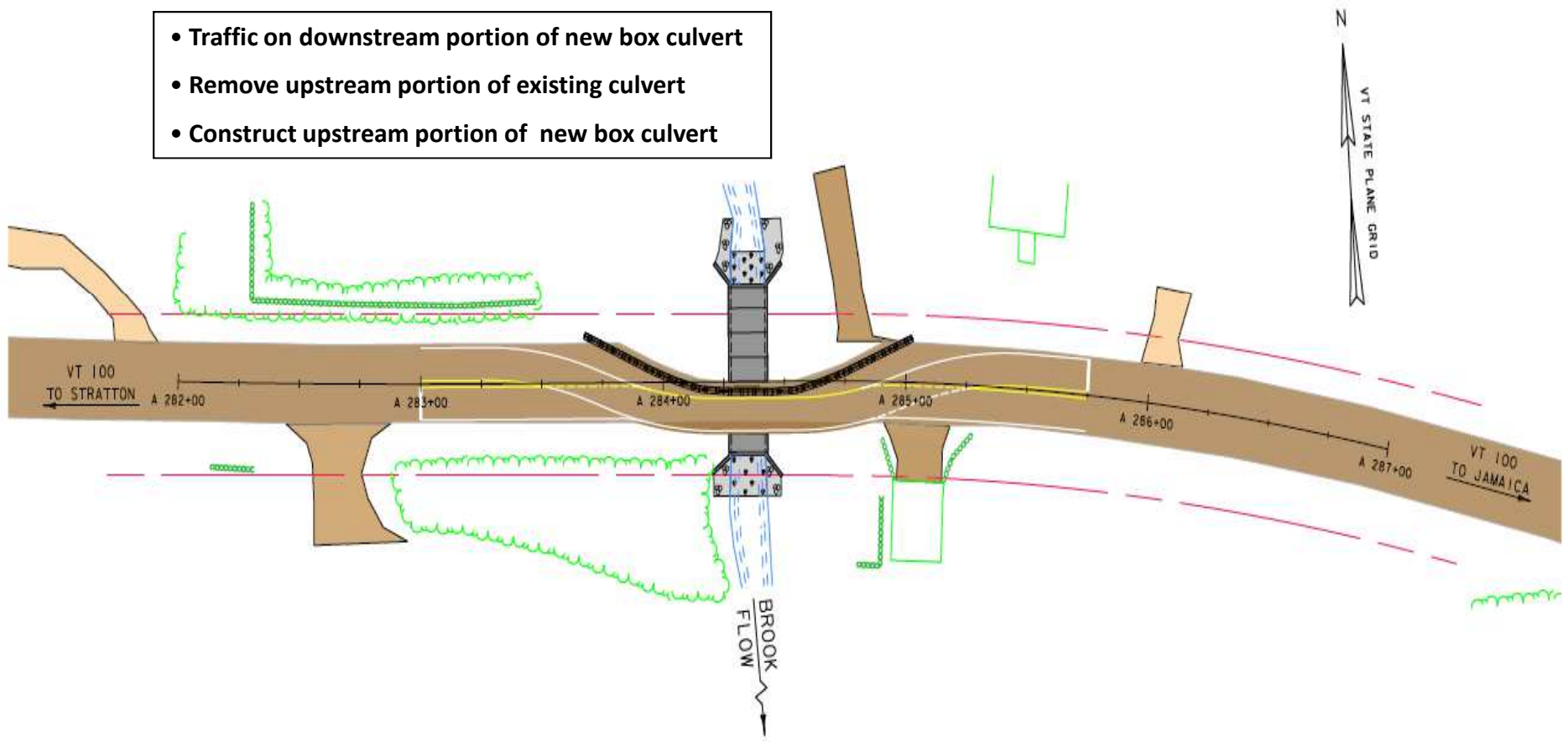
- Traffic on upstream portion of existing culvert
- Remove downstream portion of existing culvert
- Construct downstream portion of new box culvert





# Phased Construction – Phase 2

- Traffic on downstream portion of new box culvert
- Remove upstream portion of existing culvert
- Construct upstream portion of new box culvert

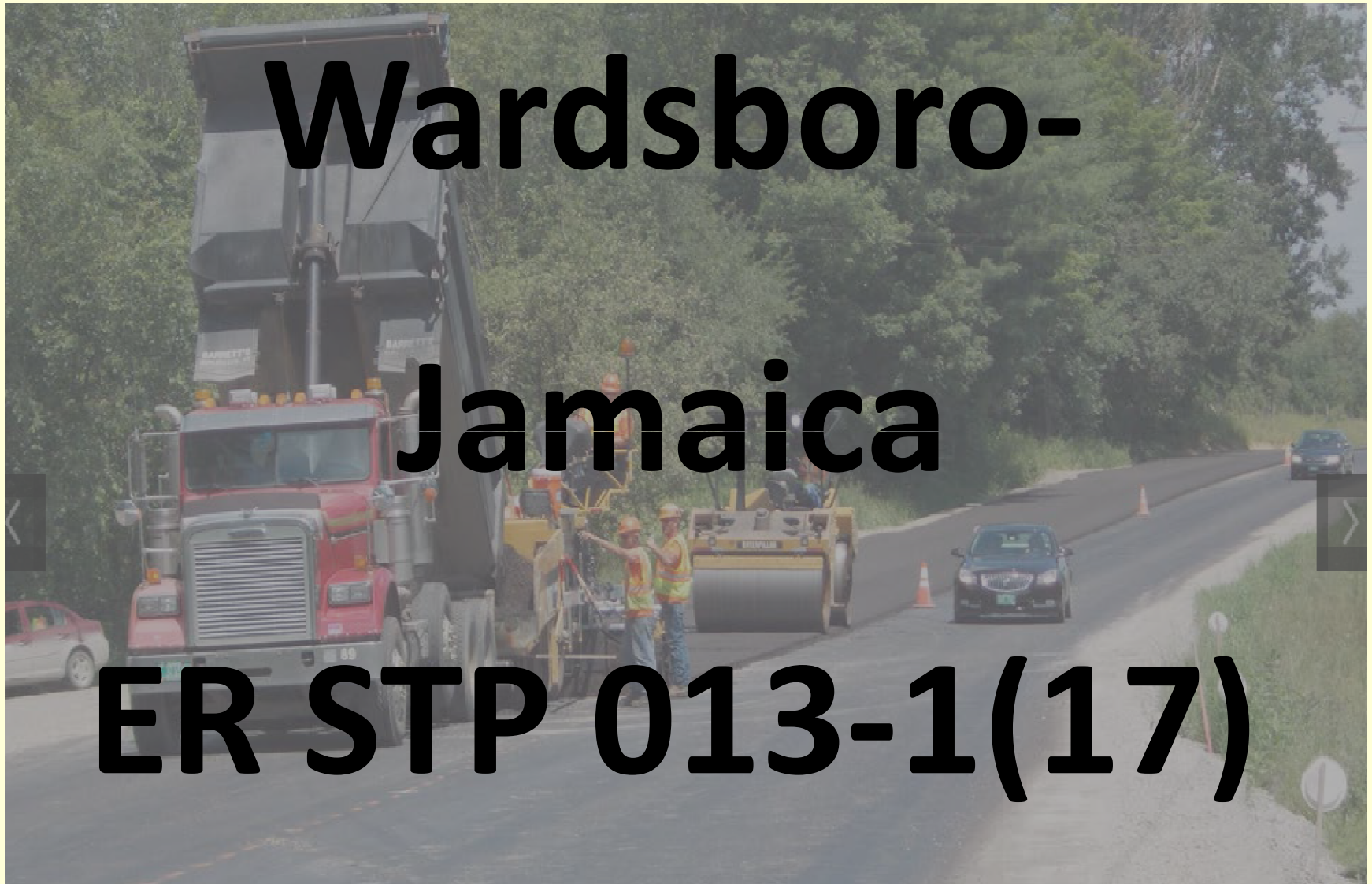


# So What has Changed????



# Wardsboro- Jamaica

ER STP 013-1(17)



# **Wardsboro - Jamaica**

## **ER STP 013-1(17)**

- 11 Mile Paving Project on VT 100 (Wardsboro to Jamaica)
- Funded using Federal Emergency Recovery (ER) funds
- Federal ER money must be obligated within 2 - 3 years of emergency declaration
- Construction (paving) scheduled to begin this summer 2014

# STATE OF VERMONT AGENCY OF TRANSPORTATION



## PROPOSED IMPROVEMENT TOWNS OF WARDSBORO AND JAMAICA COUNTY OF WINDHAM VT ROUTE 100 (MINOR ARTERIAL)

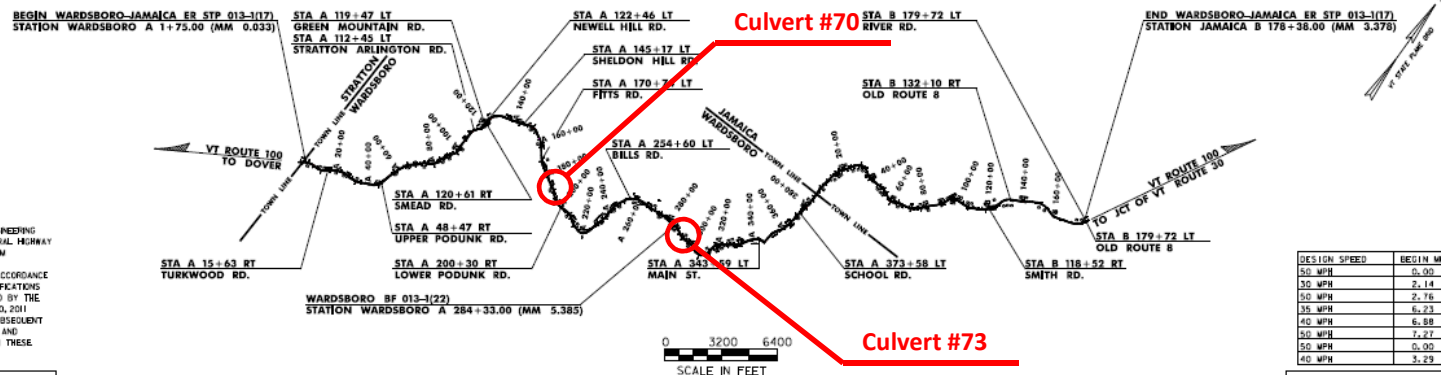
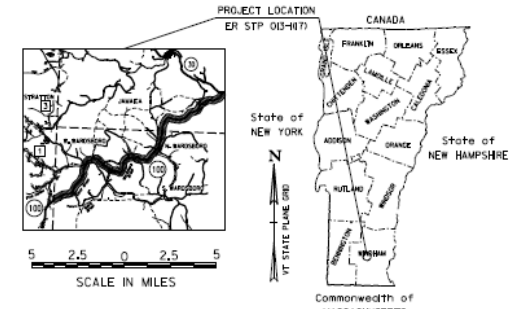
BEGINNING IN THE TOWN OF WARDSBORO ON VT ROUTE 100 AT STATION A 1+75.00 (MM 0.033) EXTENDING NORTHERLY 56,462.74 FEET (0.694) TO STATION B 178+38.00 (MM 3.378) IN THE TOWN OF JAMAICA.

PROJECT DATA:	LENGTH (FEET)	LENGTH (MILES)
TOWN OF WARDSBORO VT ROUTE 100 STA A 1+75.00 TO A 387+99.74	38,624.74	7.35

TOWN OF JAMAICA VT ROUTE 100 STA B 0+00.00 TO B 178+38.00	17,838.00	3.378
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TOTAL LENGTH OF PROJECT	56,462.74	10.694
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WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES PAVEMENT RECLAMATION, INSTALLATION OF A PRECAST BOX STRUCTURE (C73), PAVEMENT RESURFACING, PAVEMENT MARKINGS, GUARDRAIL ADJUSTMENT AND REPLACEMENT, NEW SIGNS, DRAINAGE IMPROVEMENTS, TRAFFIC CONTROL AND OTHER HIGHWAY RELATED ITEMS.



THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 1981 AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM - LEVEL 2

SURVEYED BY : VTRANS  
SURVEYED DATE : 1/3/13

DATUM

VERTICAL NAVD 88  
HORIZONTAL NAD 83 (2007)

BITUMINOUS CONCRETE PAVEMENT SUPERPAVE MIXTURE DESIGN CRITERIA	
DESIGN LIFE ESAL'S (DESIGN LANE)	740,500
DESIGN NUMBER OF DRYTATIONS	65
PERFORMANCE GRADED ASPHALT BINDER	SEE SUBSECTION 490.03 (b)

LOCATION		ADMT		DPT		TUT		VIB		ADMT		DPT		TUT	
BEGIN MM/TOWN	END MM/TOWN	2016	2036	2016	2036	2016	2036	2016	2036	2016	2036	2016	2036	2016	2036
0.000/WARDSBORO	2.130/WARDSBORO	1300	1400	270	290	7.8	12.3	54	54	110	190	508,000	1,182,000		
2.130/WARDSBORO	6.564/WARDSBORO	1400	1500	280	310	8.5	13.2	53	53	130	220	650,000	1,497,000		
6.564/WARDSBORO	3.593/JAMAICA	1200	1300	250	270	19.0	26.1	54	54	170	260	1,388,000	3,087,000		

DESIGN SPEED	BEGIN MM	END MM	TOWN
50 MPH	0.00	2.14	WARDSBORO
35 MPH	2.14	2.76	WARDSBORO
50 MPH	2.76	6.23	WARDSBORO
35 MPH	6.23	6.88	WARDSBORO
40 MPH	6.88	7.27	WARDSBORO
50 MPH	7.27	7.35	WARDSBORO
50 MPH	0.00	3.29	JAMAICA
40 MPH	3.29	3.38	JAMAICA

DIRECTOR OF PROGRAM DEVELOPMENT  
APPROVED \_\_\_\_\_ DATE \_\_\_\_\_  
PROJECT MANAGER : KEN UPWAL, P.E.

PROJECT NAME : WARDSBORO - JAMAICA  
PROJECT NUMBER : ER STP 013-1(17)

SHEET 8 OF 418 SHEETS

**Paving Project  
affect on culvert  
replacement schedule**

# **Paving Project affect on culvert replacement schedule**

- Paving Project scheduled to begin Summer 2014
- Major construction with significant impacts to the travelling public
- Culverts Programmed for construction 2015/2016
- Another summer of impacts to the travelling public
- Would be removing new pavement to install the culverts
  - Two joints in pavement at each culvert
- Projects would cost more



# **Revised Culvert Replacement Recommendation**

# Our Solution



# **Combine Culvert Replacement Projects w/ Wardsboro – Jamaica Paving Project**

- Culverts would be constructed in the same year
- No additional impacts on travelling public
- Eliminate removing new pavement and adding joints
- Culvert replacements would be less expensive

BUT.....

- Requires revisions to culvert replacement details in order to “fit” with paving project
- Revise culvert replacement recommendations as presented in September 2013

# Revised Alternative Recommendation

## Full Culvert Replacement

- Still Replace with a precast concrete box culvert
- Still Cost effective
- Still Long-term fix
- Now use Accelerated Bridge Construction Technologies

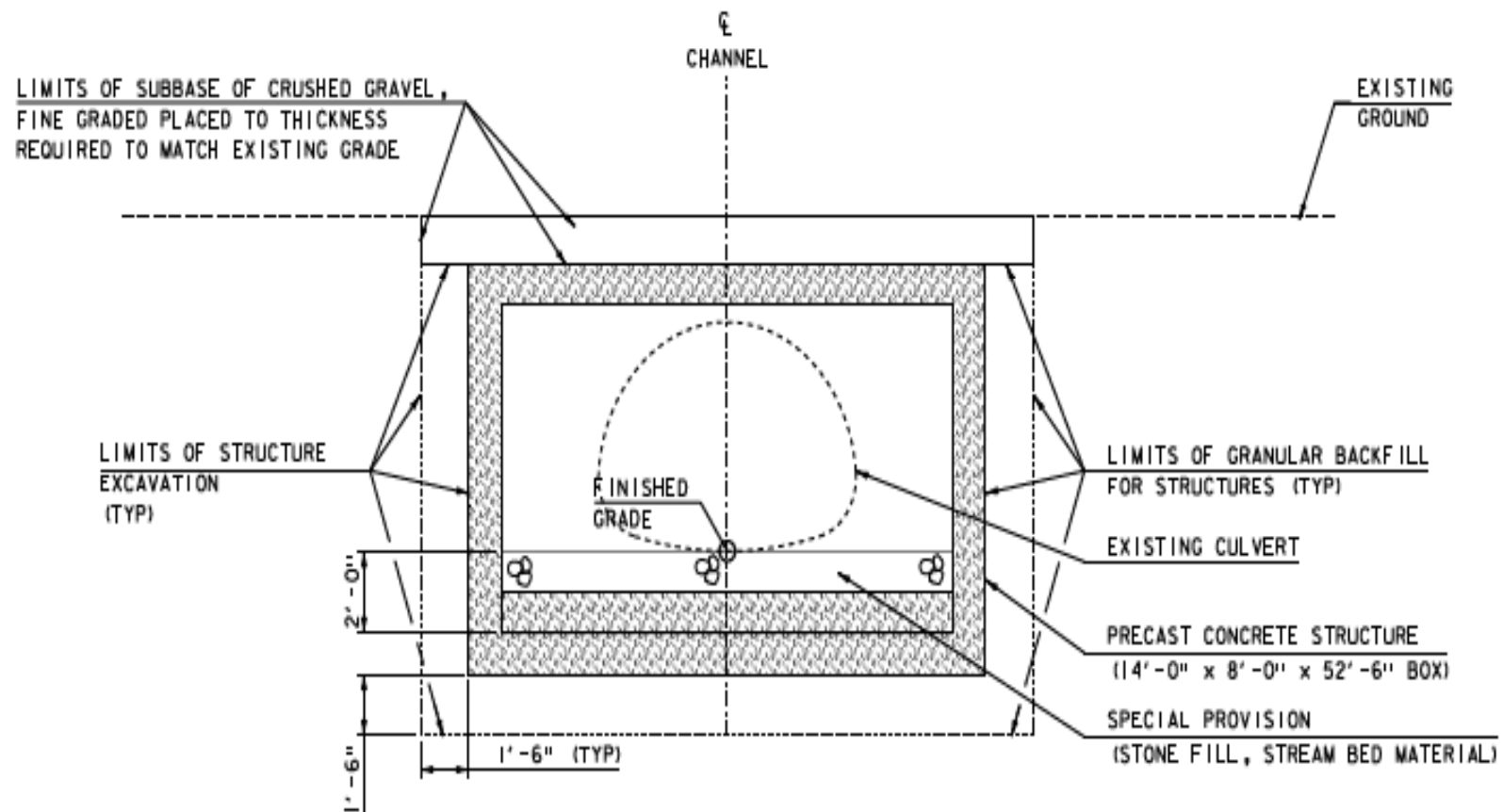


# **Revised Culvert Replacement Details**

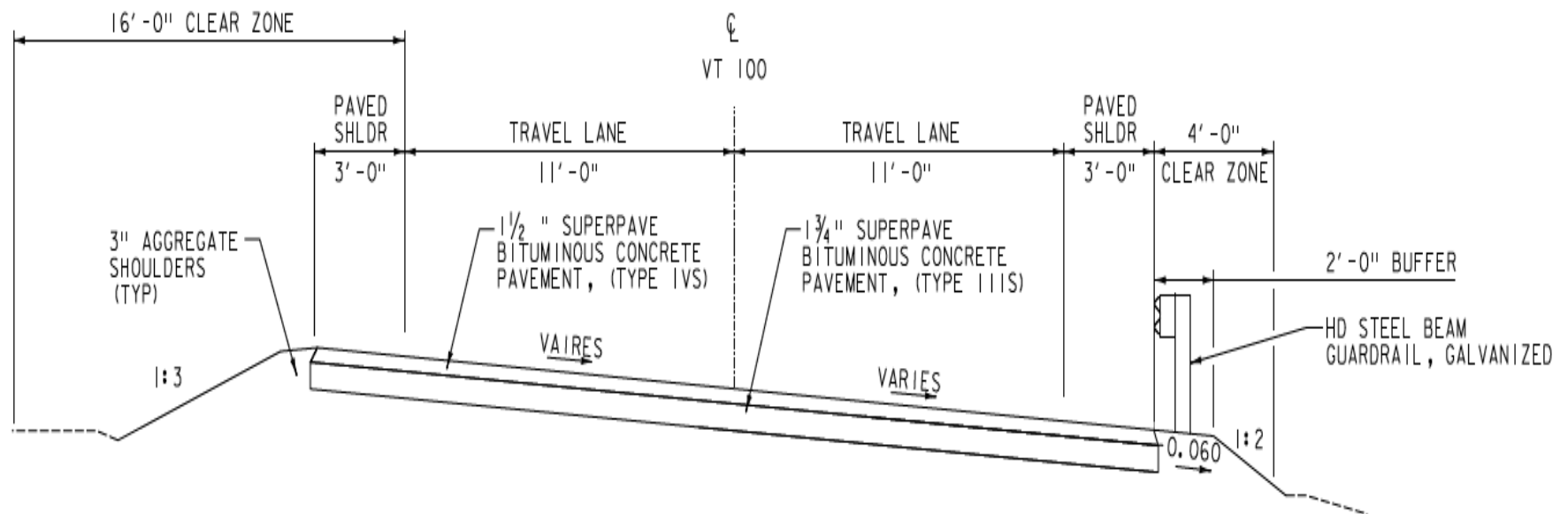
# **Full Culvert Replacement Details (Revised)**

- 14' wide x 8' high concrete box culvert (Same)
- 28' roadway = 3' shoulders and 11' Travel Lanes (matches paving project)
- Maintain existing centerline of VT. Rte. 100 (Same)
- Long term (80 year) solution (Same)
- New structure allows for passing of Q100 without over topping roadway (Same)
- Construction planned for 2014/2015 (build with Paving project this summer)

# Box Culvert Typical

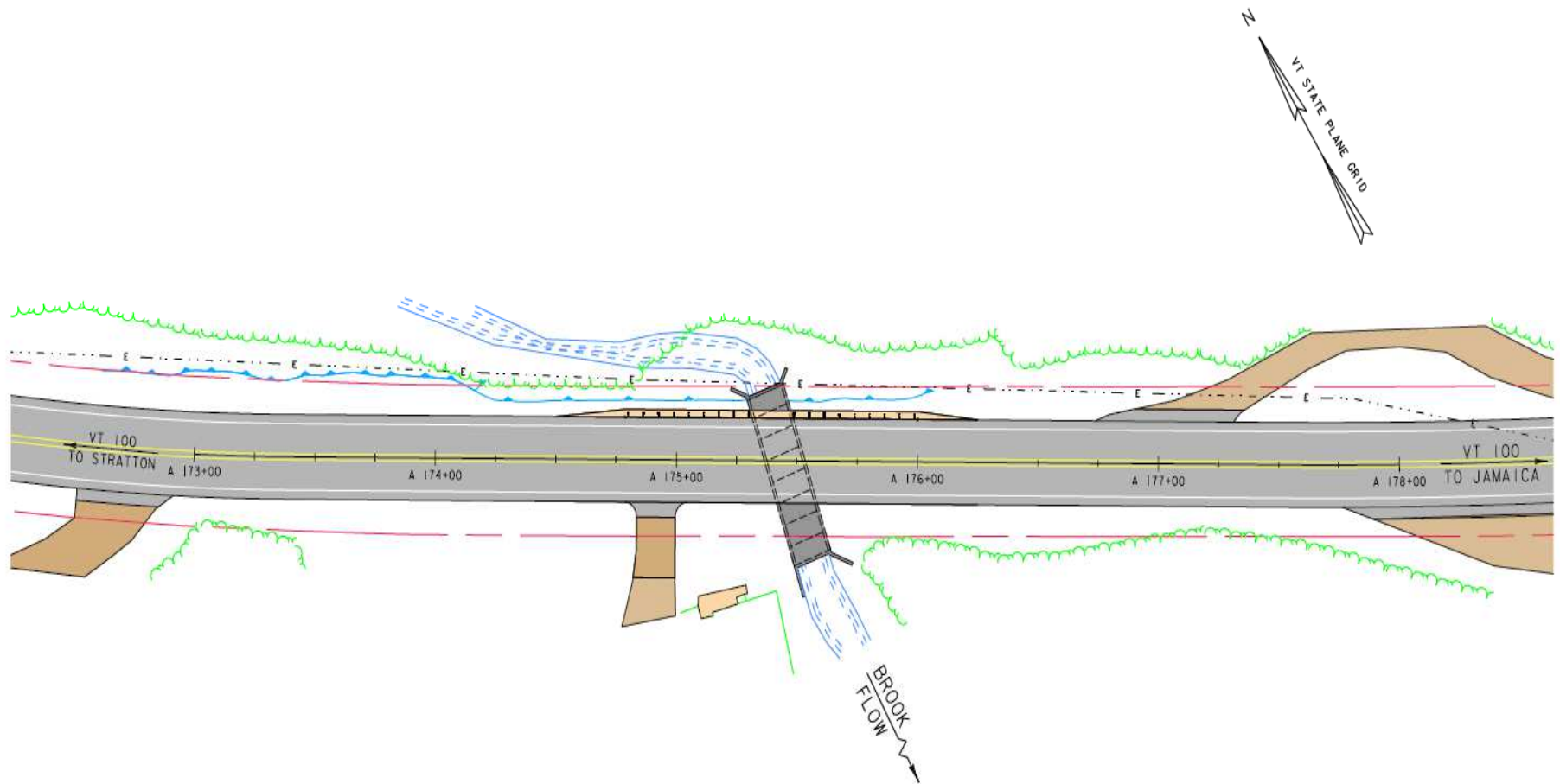


# Roadway Typical

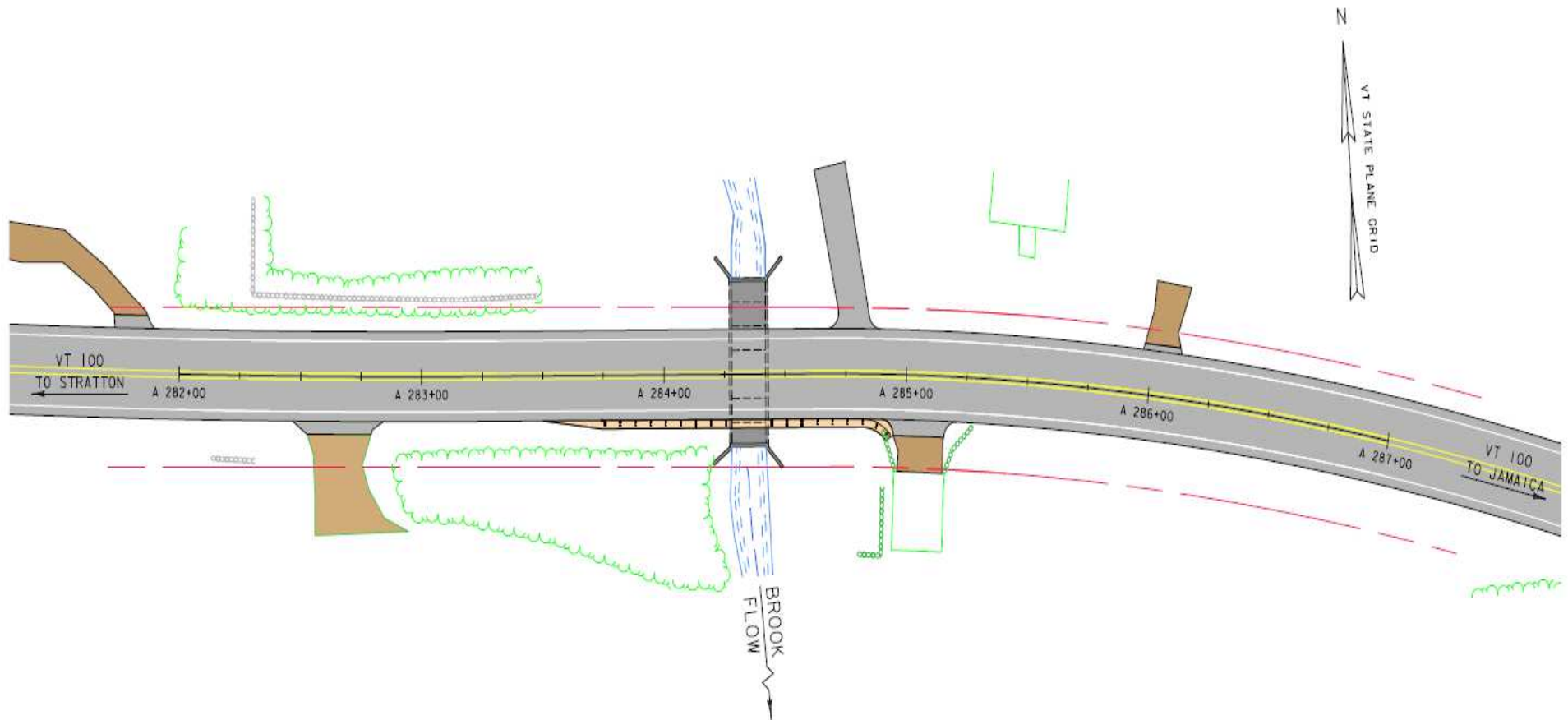




# Layout Culvert #70



# Layout Culvert #73



# **Revised Maintenance of Traffic**

# Revised Alternative Recommendation

## Full Culvert Replacement

- Still Replace with a precast concrete box culvert
- Still Cost effective
- Still Long-term fix
- Now use Accelerated Bridge Construction Technologies

## Maintenance of Traffic

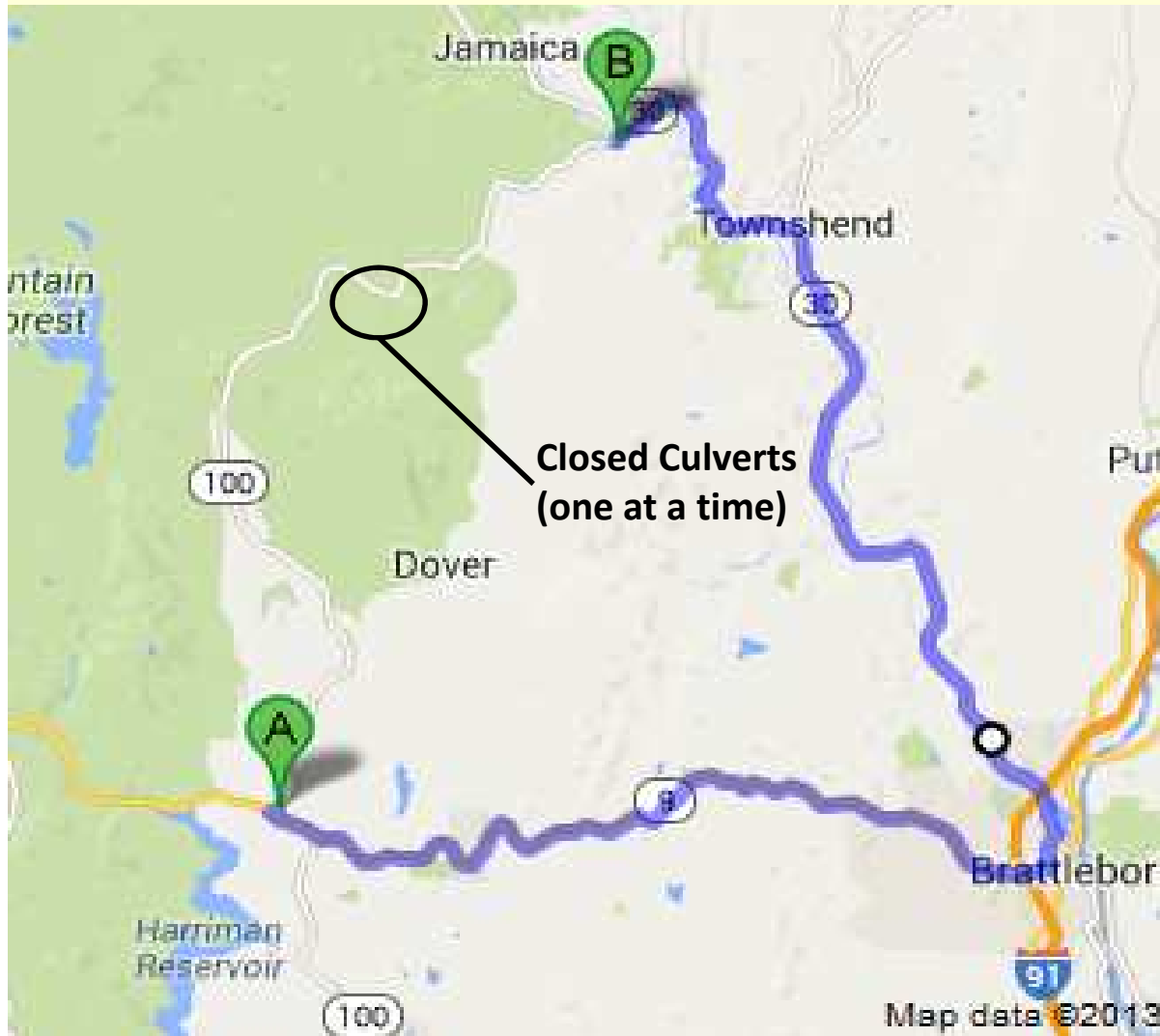
- Close VT 100 at the culverts – One weekend each
- Use Incentive/Dis-Incentive contracting to minimize closure time
- Sign a State Route detour during closures
- Locals will seek alternate routes



# Short-term bridge closure with ABC

- Culverts to be closed two separate weekends Friday 6pm to Monday 6am (60 hours max)
- Allow 24/7 construction during bridge closure
- Contract incentives/dis-incentives to encourage contractor to open culvert as quickly as possible.
- Community would have input on time of closure (between July 18 and August 18)
- State would be responsible for detour route (State Routes Only)
- Public Outreach to provide advance notice for planning
- Law enforcement can help during closure period.
- Vtrans has had several successful culvert replacements using ABC

# State Detour Route



**A-B Thru Route = 22 miles**

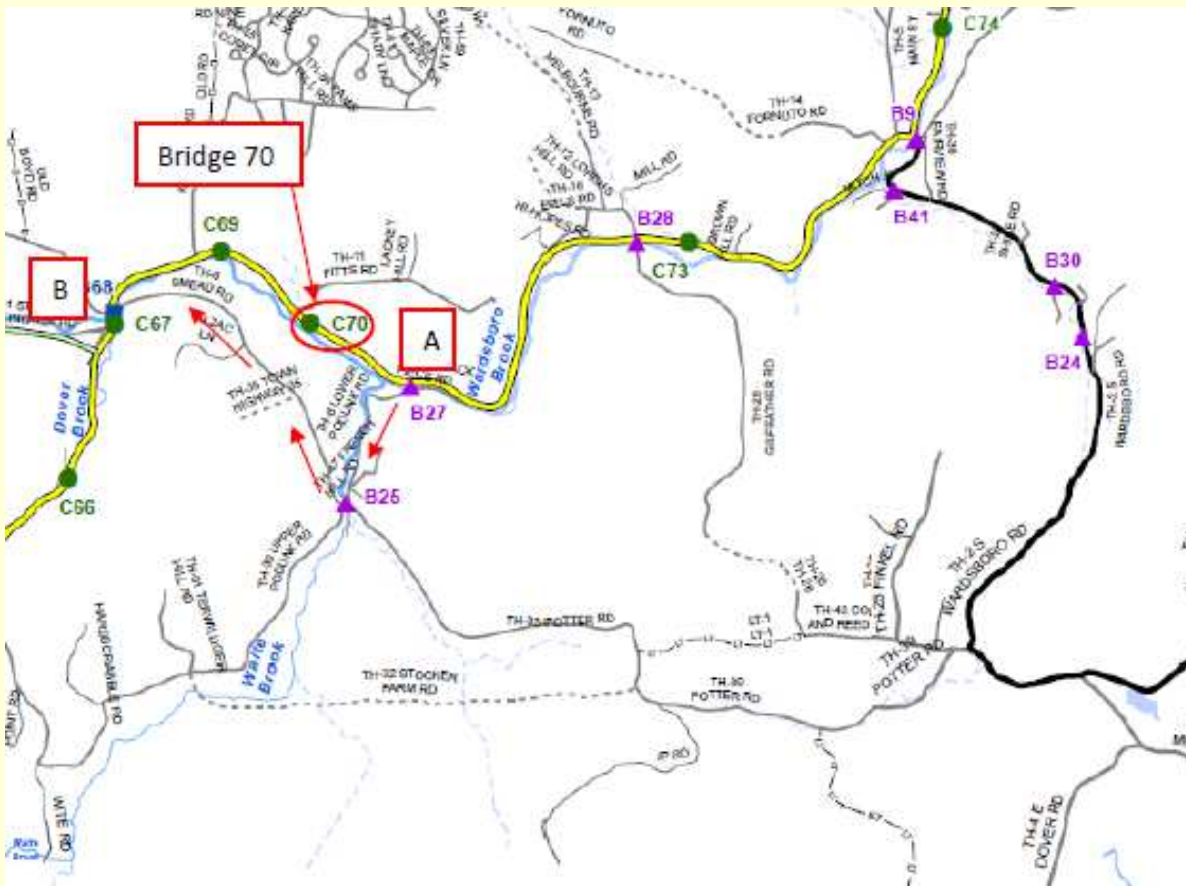
**A-B Detour Route = 42 miles**

**Added Miles = 20 miles**

**End-End = 64 miles**

**VT Route 100, to VT Route 9, to VT Route 30, back to VT Route 100**

# Local Bypass for Culvert #70



A-B Thru Route = 1.5 miles

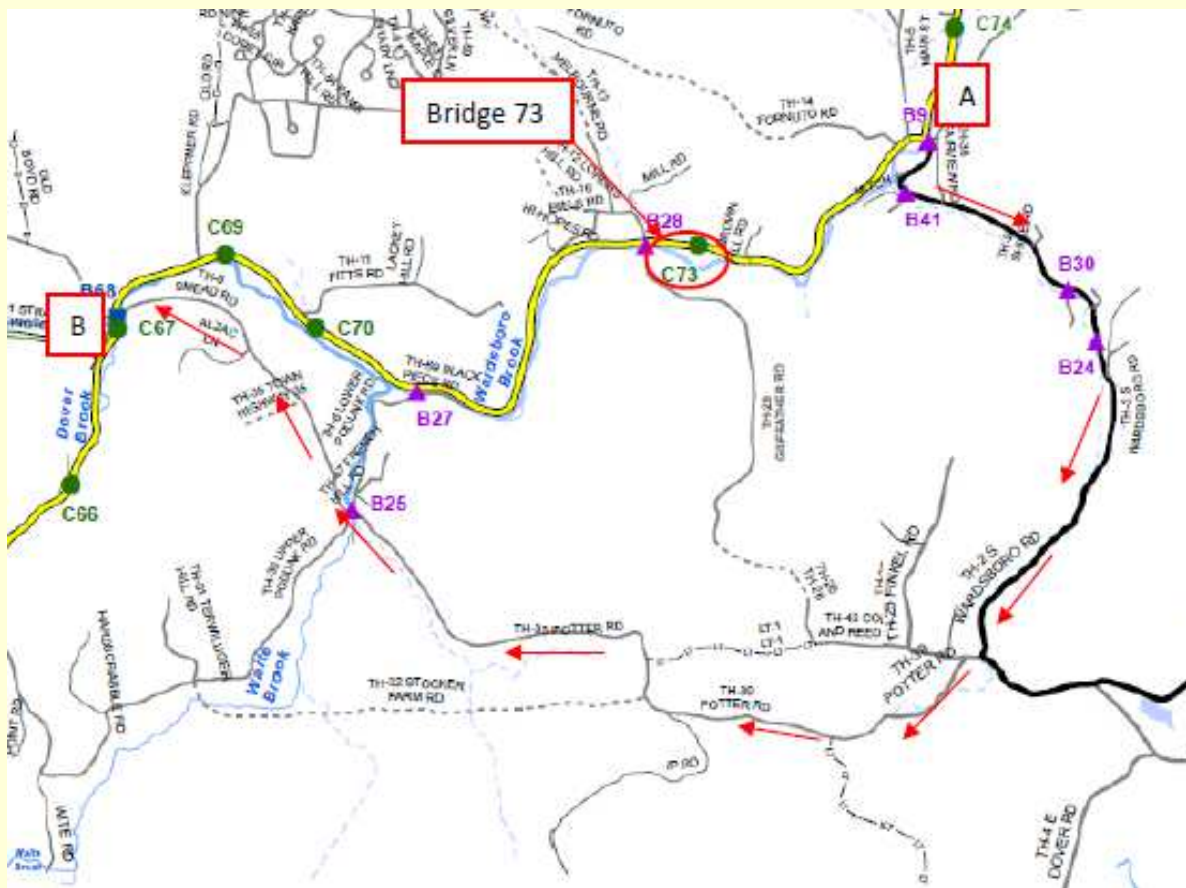
A-B Detour Route = 2.1 miles

Added Miles = 0.6 miles

End-End = 3.6miles

VT Route 100, to Podunk Road, to Smead Road, back to VT Route 100

# Local Bypass for Culvert #73



**A-B Thru Route = 4.3 miles**

**A-B Detour Route = 7.4 miles**

**Added Miles = 3.1 miles**

**End-End = 11.7 miles**

**VT Route 100, to South Wardsboro Road, to Cobb and Reed Hill Road,  
to Potter Road, to Podunk Road, to Smead Road, back to VT Route 100**



# Addison STP CULV(14)

- Roadway closed Friday at 6:00 pm





# Addison STP CULV(14)

- Placing boxes on Saturday



# Addison STP CULV(14)

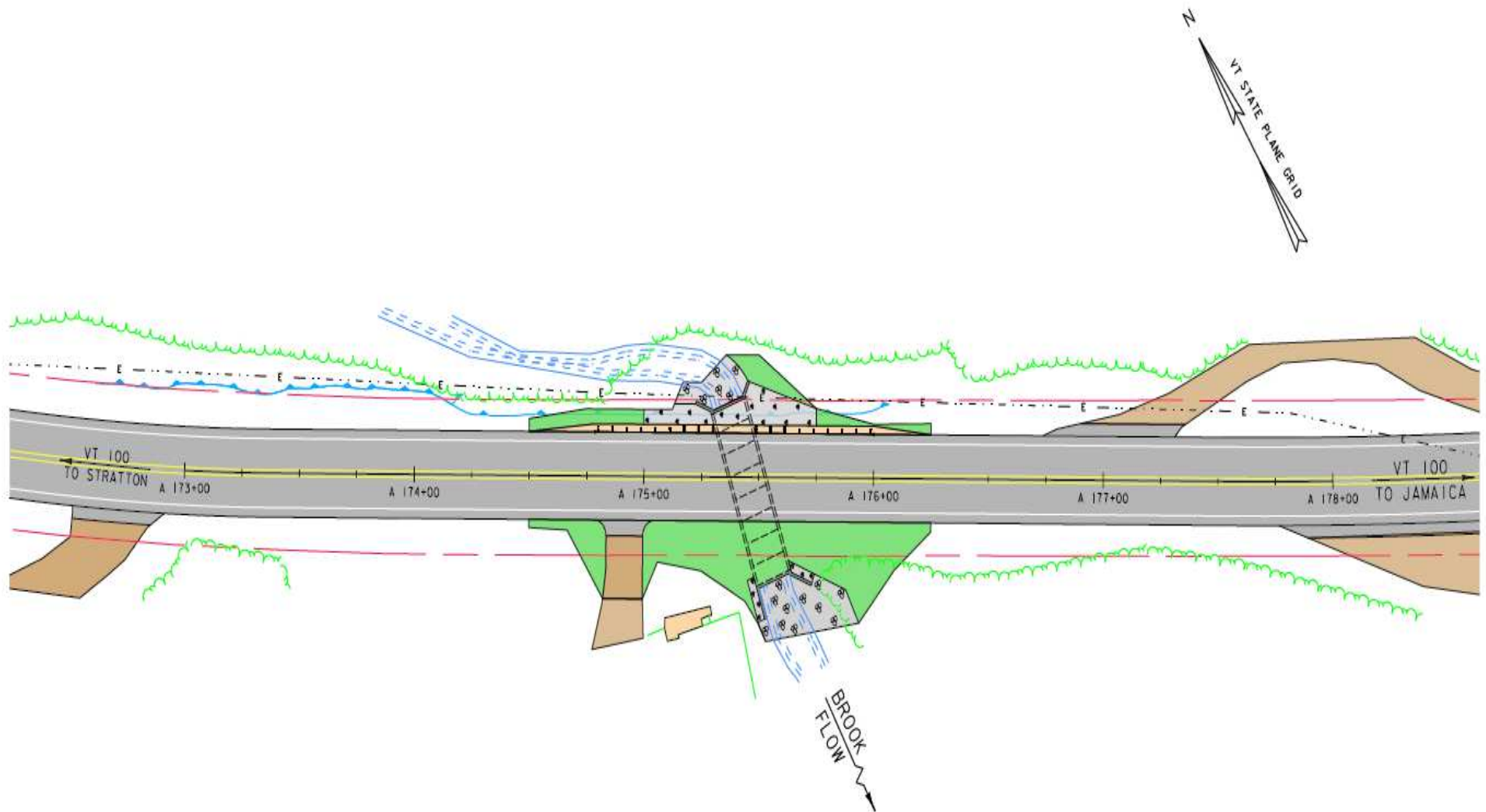
- Roadway opened Sunday 2:00pm



## **Conclusion and Recommendation**

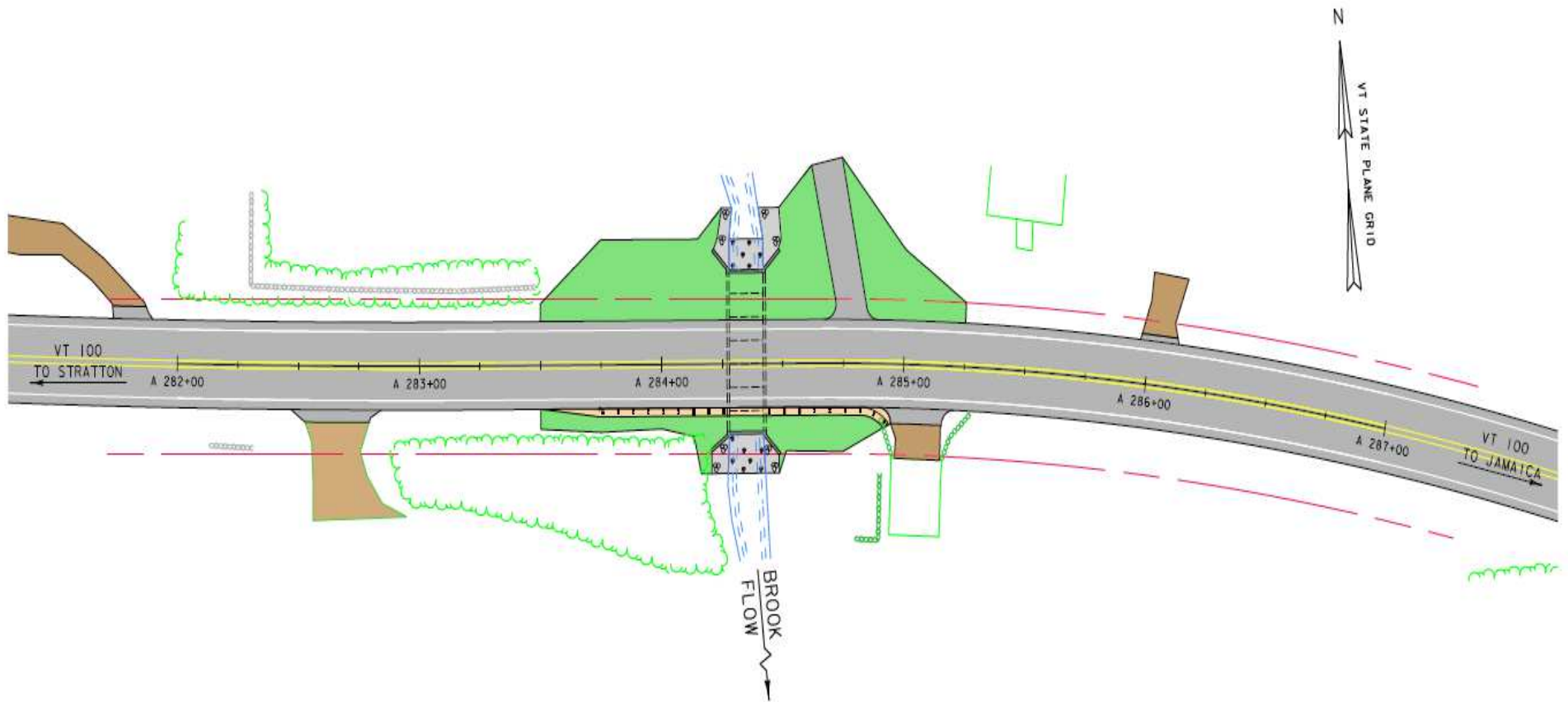
- Full Culvert Replacement using short-term closure with ABC
- Advertise both culverts with the paving project this spring
- Construct both culverts over the summer of 2014
- Long term (80 year) fix
- Both culverts hydraulically adequate for Q100 storm
- Project Development time minimized
- Minimal mobility impacts
- Compensate for Impacts to adjacent property owners

# Full Replacement – Layout Culvert 70





# Full Replacement – Layout Culvert 73



**Next Steps**



## **Next Steps**

This is a list of a few important activities expected in the near future and is not a complete list of activities.

- Consider comments from this meeting
- Develop Contract Plans and bundle into paving project
- Acquire Construction Rights
- Vtrans has received written Rights of Entry for all but one parcel for both projects
- Right of Entry allows us to move ahead with construction
- Compensate property owners for rights needed to build projects.
- Use State of Vermonts “Minor Alterations” process

# **Right of Way Acquisition**

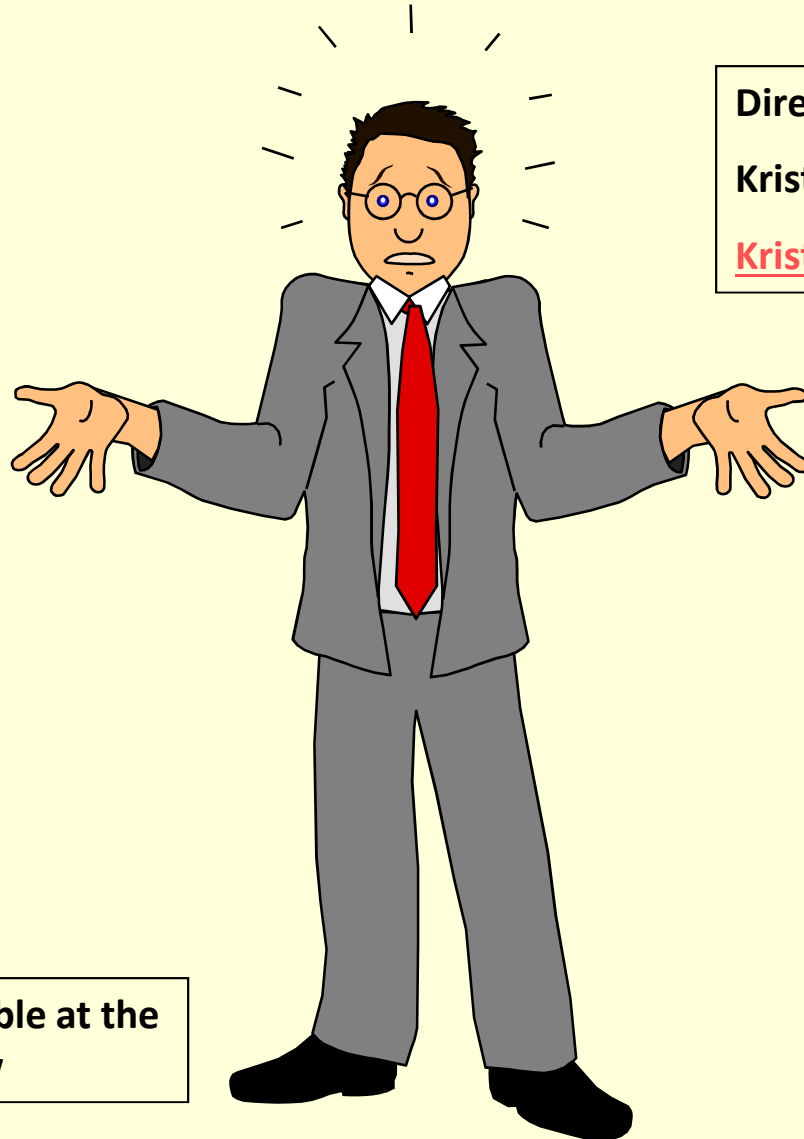
## **“Minor Alterations” Right of Way Process Vermont Statutes Annotated, Title 19, Sections 518 and 923**

- **Develop Right of way plans detailing areas of acquisition**
- **Written-Notice to property owner by certified mail for damage award.**  
**Negotiations can occur for 30 days following the written notice. If agreement can not reached, an onsite inspection of premises will be conducted. This meeting will be scheduled but may not be necessary.**
- **Inspection of Premises – Hearing officer will conduct property inspection with property owner and receive testimony pertinent to any problems including awards for damages.**
- **Necessity – Hearing Officer shall decide on the necessity of the activity or work proposed and establish any conditions for accomplishing it. This includes the award of damages, if applicable.**
- **The decision and reasons shall be announced within 10 days of the meeting.**

## **“Minor Alterations” Right of Way Process Vermont Statutes Annotated, Title 19, Sections 518 and 923**

- **Notifying Parties – The Hearing Officer shall notify the property owner and any interested party of their decision.**
- **Hearing Officer shall file a copy of their decision with the town clerk within 10 days of its announcement.**
- **Appeal – If property owner is dissatisfied with the award for damages he or she may appeal using the procedure specified in Section 513 of Title 19. Notice or petition for appeal shall not delay the proposed work activity.**

# Questions



**Direct any questions to:**

**Kristin Higgins, P.E.**

**[Kristin.Higgins@State.VT.US](mailto:Kristin.Higgins@State.VT.US)**

**This presentation is available at the  
web address shown below**

**<https://outside.vermont.gov/agency/vtrans/external/Projects/Structures/13B072>**